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[54] **THREE-DIMENSIONAL OBJECT MOVEMENT AND TRANSFORMATION PROCESSING APPARATUS FOR PERFORMING MOVEMENT AND TRANSFORMATION OF AN OBJECT IN A THREE-DIAMENSIONAL SPACE**

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[52] **U.S. Cl.** **395/86**; 395/80; 395/119; 395/137; 395/138; 395/139; 382/295; 382/296; 382/298; 382/153; 382/154
[58] **Field of Search** 395/80, 86, 97, 395/119, 137, 138, 139; 382/44, 47, 293, 298, 153, 154, 295, 296

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[57] **ABSTRACT**

A three-dimensional object movement and transformation processing apparatus has a shape storing section for storing shapes of a plurality of three-dimensional objects, an affine matrix calculating section for calculating transformation affine matrices Mow indicating movement or transformation of the objects from shape prescription coordinate systems prescribing the shapes of the objects to a world coordinate system, an inverse matrix calculating section for calculating inverse matrices Mwo of the matrices Mow indicating movement or transformation of the objects from the world coordinate system to the shape prescription coordinate systems, and an inter-object processing section for changing shapes of a pair of objects overlapping with each other to processed shapes according to the matrices Mwo and Mow of the second objects to reflect an overlapping condition in the processed shapes. When movement data of a first object is input, matrices Mow and Mwo for the first object are renewed in the calculating sections, and shapes of the first object and a second object overlapping with the first object are renewed in the processing section and the storing section.

19 Claims, 9 Drawing Sheets